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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Artcle 36 and Rule 70)

Applicant's or agent's file reference 1230-PCT12	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. **PCT/KR2003/001899**	International filing date *(day/month/year)* **17 SEPTEMBER 2003 (17.09.2003)**	Priority date *(day/month/year)* 25 SEPTEMBER 2002 (25.09.2002)

International Patent Classification (IPC) or national classification and IPC

IPC7 F02B 53/00

Applicant

KIM, Dong-Hyun

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 3 sheets, including this cover sheet.

   [X] This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:

   - I [X] Basis of the report
   - II [ ] Priority
   - III [ ] Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV [ ] Lack of unity of invention
   - V [X] Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI [ ] Certain documents cited
   - VII [ ] Certain defects in the international application
   - VIII [ ] Certain observations on the international application

Date of submission of the demamd	Date of completion of this report
08 JANUARY 2004 (08.01.2004)	17 JANUARY 2005 (17.01.2005)

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Form PCT/IPEA/409 (cover sheet) (July 1998)

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International aplication No.
PCT/KR2003/001899

I. Basis of the report

1. With regard to the elements of the international application:*

☐ the international application as originally filed

☒ the description:
pages 1-20 , as originally filed
pages _____ , filed with the demand
pages _____, filed with the letter of _____

☒ the claims:
pages _____ , as originally filed
pages _____ , as amended (together with any statment) under Article 19
pages _____ , filed with the demand
pages 21-23 , filed with the letter of 11/01/2005

☒ the drawings:
pages 1/8-8/8 , as originally filed
pages _____ , filed with the demand
pages _____, filed with the letter of _____

☐ the sequence listing part of the description:
pages _____ , as originally filed
pages _____ , filed with the demand
pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language English which is

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☒ the language of publication of the international application(under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination(under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide** and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained inthe international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disc losure in the international applicationas as filed has been furinshed.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☒ the claims, Nos. 7

☐ the drawings, sheets _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box(Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed." and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.*

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INTERNATIONAL PRELIMINARY EXAMINATION

International aplication No.
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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-6, 8, 9	YES
	Claims		NO
Inventive step (IS)	Claims	1-6, 8, 9	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-6, 8, 9	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

Reference is made to the following documents:

D1: US 5,261,365 A (not cited in the International Search Report)
D2: JP 10-205345 A

D1, which is considered to represent the most relevant state of the art, discloses a rotary combustion engine from which the subject matter of claim 1 differs in that the pistons are guided by the guiding member disposed at the center of the rotary member.

Therefore, the subject matter of claim 1 is novel under PCT Article 33(2).

The problem to be solved by the present invention may be regarded as being to ensure that the explosion stroke is carried out efficiently at the exhaust chamber to improve the output power of the rotary engine. The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step under PCT Article 33(3) for the following reason:

The present invention adopts the guiding member and the exhaust chambers partitioned by the shutoff valves, which are not fairly suggested in D1 or D2 and are not rendered obvious to the person skilled in the art.

Claims 2-6,8,9 which are dependent on claim 1 also meet the requirements of PCT Article 33(2) and 33(3) with respect to novelty and inventive step.

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Claims:

1. A rotary engine comprising:

a cylindrical housing (2) having an intake chamber (32) and an exhaust chamber (34) formed at the inner wall thereof, the intake and exhaust chambers being caved in the inner wall of the housing;

a guiding member (26) disposed at the center of the housing(2), the guiding member (26) being formed in a semi-elliptical shape at intake and compression sections and in a semicircular shape at an exhaust section;

a rotary member (6) disposed in the housing (2) such that the rotary member (6) can be rotated along with a rotating shaft (4);

pistons (12) disposed in a plurality of operating chambers (8) formed at the rotary member (6) such that the pistons (12) can be rotated about shaft rods (58), respectively, each of the pistons (12) having a tail part contacting the outer circumference of the guiding member (26);

shutoff valves (16) engaged in a guide groove (50) formed at the housing (2) through guide rods inserted through intake/exhaust ports (14) formed at the operating chambers (8) of the rotary member (6);

an ignition plug disposed at the inlet of the exhaust chamber of the housing or at the intake/exhaust ports of the rotary member; and

AMENDED SHEET(ART.34)

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shutoff plates (18) rotatably disposed at the outsides of the intake/exhaust ports (14) of the rotary member (6), respectively, the shutoff plates (18) being engaged in the guide groove (50) of the housing (2) through guide rods.

2. The engine as set forth in claim 1, further comprising oil seals (28, 30) surrounding the intake chamber (32) and the exhaust chamber (34) of the housing (2), respectively.

3. The engine as set forth in claim 2, wherein the oil seals (28, 30) comprise sealing parts (40, 42) and plate springs (44, 46), both sides of the sealing parts (40, 42) being separable from the housing body of the housing (2).

4. The engine as set forth in claim 1, further comprising oil seals (74) arranged around the intake/exhaust ports (14) formed at the operating chambers (8) of the rotary member (6), respectively.

5. The engine as set forth in claim 1, wherein each of the shutoff valves (16) for opening or closing the intake/exhaust ports (14) of the rotary member (6) comprises: a rod-shaped body; a passage (64) formed at one side of the rod-shaped body; and guide rods (66, 68) eccentrically formed at both ends of the rod-shaped body.

AMENDED SHEET(ART. 34)

6. The engine as set forth in claim 1, wherein the pistons (12) are constructed such that guide rollers of guiding pieces (10) connected to shaft rods (58) of the pistons (12) contact the sidewall of an elliptical guide groove (48) formed at the housing (2).

7. (cancelled)

8. The engine as set forth in claim 1, wherein the operating chambers (80) of the rotary member (60) have air-supplying channels (22) that can be opened or closed by shutoff valves (20), respectively.

9. The engine as set forth in claim 8, wherein each of the shutoff valves (20) for opening or closing the air-supplying channels (22) comprises: a passage (91) formed at one side of a rod-shaped body thereof; and guide rods (92, 94) eccentrically formed at both ends of the rod-shaped body, the guide rods(92, 94) being engaged in a guide groove (52) formed at the housing (2).

AMENDED SHEET(ART. 34)